# 2018 Spring Electrofishing (SEII) Summary Report
# Moon Lake (WBIC 101700)
## Marquette County



## Introduction and Survey Objectives

In 2018, the Department of Natural Resources conducted a one night electrofishing survey of Moon Lake in order to provide insight and direction for the future fisheries management of this water body. Primary sampling objectives of this survey were to characterize species composition, relative abundance, and size structure. The following report is a brief summary of all activities conducted, general status of fish populations and future management options.

Acres: 71 | Shoreline Miles: 2 | Maximum Depth (feet): 13
Lake Type: Shallow Seepage | Public Access: 1 Boat Launch
Regulations: All species statewide default regulations.


WISCONSIN DNR CONTACT INFO.

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**Survey Information**

| Site location | Survey Date | Water Temp. (F) | Target Species | Total Miles Shocked | No. of Stations | Gear | Dippers |
|---|---|---|---|---|---|---|---|
| Moon Lake | 5/09/2018 | 66 | All | 2 | 4 | Boomshocker | 2 |

## Fish Metric Descriptions
### PSD, CPUE, and LFD

**Proportional Stock Density (PSD)** is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

**Catch per unit effort (CPE**) is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per hour of electrofishing the shoreline CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

**Length frequency distribution (LFD)** is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling

## Survey Method

- Moon Lake was sampled according to spring electrofishing (SEII) protocols as outlined in the statewide lake assessment plan. The primary objective for this sampling period was to count and measure adult bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- The entire shoreline of 2 miles was sampled using a boomshocker. All fish were identified to species and gamefish and panfish were measured for length.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, and length frequency distributions.

**Size Structure Metrics**

| Species | Total | Average Length (inches) | Length Range (inches) | Stock and Quality Size (inches) | Stock Number | Quality Number | PSD | 2010 PSD | Percentile Rank | Size Rating |
|---|---|---|---|---|---|---|---|---|---|---|
| Bluegill | 69 | 7.6 | 2.4 - 9.4 | 3.0 and 6.0 | 67 | 62 | 93% | 36% | 98th | High |
| Largemouth Bass | 612 | 9.6 | 3.7 - 17.2 | 8.0 and 12.0 | 612 | 97 | 17% | 9% | 7th | Low |
| Yellow Perch | 14 | 9.8 | 6.6 - 11.2 | 5.0 and 8.0 | 14 | 12 | 86% | - | 98th | High |

**Abundance Metrics**

| Species | Stock Size CPE (No. per Hour) | 2010 Stock Size CPE (No. per Hour) | Total CPE (No. per Mile) | Percentile Rank | Overall Abundance Rating | Length Index | Length Index CPUE (No.per hour) | Length Index Percentile Rank | Length Index Abundance Rating |
|---|---|---|---|---|---|---|---|---|---|
| Bluegill | 95 ( ≥ 3 Inches) | 79 | 46 | 35th | Low -Moderate | ≥ 7.0 inches | 81 | 92nd | High |
| Largemouth Bass | 594 ( ≥ 8 Inches) | 254 | 306 | 100th | High | ≥ 14.0 inches | 3 | 37th | Moderate |
| Yellow Perch | 13 ( ≥ 5 Inches) | 4 | 9 | 41st | Moderate | ≥ 8.0 inches | 9 | 93rd | High |
| Pumpkinseed | 1 (≥ 3 Inches) | 58 | 1 | 3rd | Low | ≥ 7.0 inches | 1 | 56th | Moderate |

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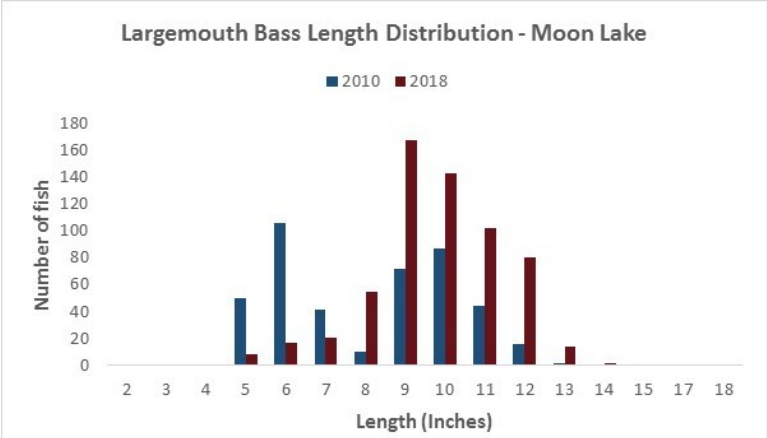


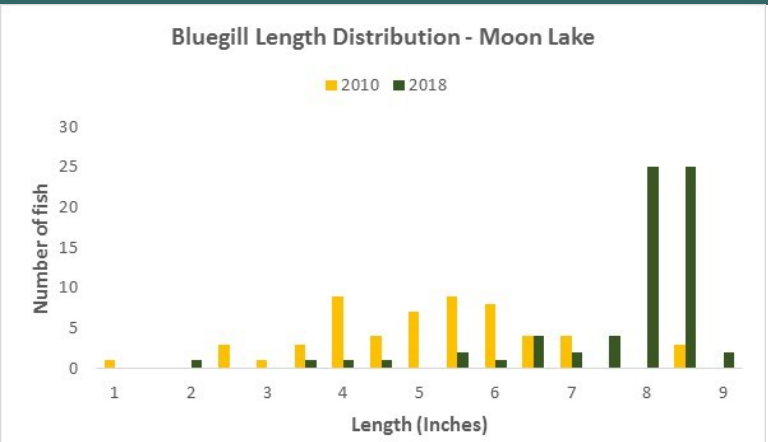


## Summary

- A total of 710 fish in 7 species were collected during our survey. The most frequently encountered and common species were largemouth bass (612), bluegill (69), and yellow perch (14).
- Other species sampled in lower abundance included bluntnose minnow (1), green sunfish (3), pumpkinseed (1), and yellow bullhead (10).
- Largemouth bass was the dominant gamefish captured in our survey. Size structure was low while abundance levels were extremely high (594/Hr > 8 inches) more than twice as many as the 2010 survey (254/Hr). The increase in largemouth bass is significant, showing a 134% increase in 8 inch and larger fish. The high density of bass may be limiting the potential for larger bass, along with suppressing the recruitment of panfish.
- The largest largemouth bass sampled was 17.2 inches and only 17% of the catch was greater than 14.0 inches, a slight improvement since 2010 when 9% of largemouth captured were above 14.0 inches.
- Panfish populations were mainly comprised of bluegill. Bluegill densities were at moderate levels (95/Hr), which is a slight increase from 2010 (79/Hr). Bluegills showed high size structure with 93% of the catch greater than 6 inches, compared to 36% in 2010. Lack of recruitment is increasing this metric dramatically.
- Moon Lake is similar to some other lakes in the area in regards to high densities of largemouth bass and low densities of bluegill. Largemouth bass are an important predator to keep bluegill numbers at ideal densities, but an over abundance of them can be detrimental to the bluegill population. A good balance can provide excellent angling opportunities for bass and bluegills alike.

## Management Options

This survey was primarily intended to assess largemouth bass and sunfish populations. Other species are captured but different survey techniques are typically used to assess their population metrics. Therefore, management recommendations are focused on bass and panfish.

**Largemouth Bass**

- Management Objective: Increase largemouth CPUE of bass > 14.0 inches to more than 20 per hour, decrease CPUE of bass > 8.0 inches to 50 - 100 per hour and increase the PSD around 40-60%.
- Management Action: A liberal bass regulation to increase harvest of largemouth bass is recommended in order to increase the numbers of larger bass and increase the abundance of bluegill/panfish.

**Panfish**

- Panfish size structure was found at high levels, while abundance was low -moderate. This is typical of high density bass fisheries. The 2018 survey showed very little change in abundance from the 2010 survey.
- Management Objective: Decrease bluegill electrofishing PSD (%>6.0 inches) to 40-60% and increase relative abundance to 200 - 300 per hour $\geq$ 3 inches. Lack of smaller sized panfish in Moon Lake is of concern for the sustainability of the fishery. Increased harvest with a liberal, no size limit for largemouth may help to achieve this goal.

**Habitat**

A diverse, natural shoreline is important to the health of a lakes aquatic ecosystem. With most of the property surrounding Moon Lake in private ownership and very little development the shoreline is in a great natural state. Protection of this near shore emergent vegetation and woody debris is critical to the lakes health.